

## WHAT IS CLAIMED IS:

1. A method of manufacturing a gas turbine part including a member having a plurality of fluid transmission paths therein utilized as a cooling/heat insulating structure, comprising the steps of:

melting a metal as a raw material of the member under pressurization of an atmospheric gas;

dissolving a gas in the metal in a molten state; and

solidifying the metal to thereby manufacture the member including a porous metal having thus created pores, wherein the pores of the porous metal are arranged as a plurality of through pores and/or closed pores, each of which is formed in an substantially linear shape and acts as a fluid path and/or as a void exhibiting a heat insulating effect, by controlling an angle of a solid-liquid interface in solidification with respect to a plane perpendicular to a traveling direction of the solid-liquid interface, which is a determination factor of a pore growing direction.

2. The method of manufacturing a gas turbine part according to claim 1, wherein the pores of the porous metal are generated so as to extend obliquely with respect to a surface of the porous metal by controlling the angle of the solid-liquid interface with respect to the plane perpendicular to the traveling direction of the solid-liquid interface, so that the solid-liquid interface is oblique with respect to the plane perpendicular to the traveling direction.

3. The method of manufacturing a gas turbine part according to claim 2, wherein the metal to be melted is a sheet metal;

wherein the sheet metal is locally heated to generate a partial molten region in the sheet metal and cooled to solidify the partial molten region while the partial molten region is moved; and

wherein the angle of the solid-liquid interface with respect to the plane perpendicular to the traveling direction of the solid-liquid interface is controlled by cooling both sides of the sheet metal in a different degree of cooling, respectively, so that the solid-liquid interface is oblique with respect to the plane perpendicular to the traveling direction.

4. The method of manufacturing a gas turbine part according to claim 3, wherein the sheet metal is heated by at least one of a heater and a high frequency coil to generate the partial molten region and cooled by a blower or the like to solidify the partial molten region.

5. The method of manufacturing a gas turbine part according to claim 3, wherein the sheet metal is cooled at a different position on the sides of the sheet, respectively, or in a different degree of cooling on the sides of the sheet, respectively.

6. The method of manufacturing a gas turbine part according to claim 2, wherein the metal to be melt is a sheet metal;

wherein the sheet metal is locally heated by at least one of heater and a high frequency coil to generate a partial molten region in the sheet metal and cooled to solidify the partial molten region while the partial molten region is moved; and

wherein the angle of the solid-liquid interface with respect to the plane perpendicular to the traveling direction of the solid-liquid interface is controlled by obliquely drawing out the sheet member with respect to the heater and/or the high frequency coil, so that the solid-liquid interface is oblique with respect to the plane perpendicular to the traveling direction.

7. The method of manufacturing a gas turbine part according to claim 6, wherein the sheet metal is cooled by a blower or the like to solidify the partial molten region.

8. The method of manufacturing a gas turbine part according to claim 2, wherein the porous metal is formed using an inside cooled casting mold capable of obtaining a sheet cast member; and

wherein the angle of the solid-liquid interface with respect to the plane perpendicular to the traveling direction of the solid-liquid interface is controlled by cooling both sides of the sheet cast member in a different degree of cooling, respectively, so that the solid-liquid interface is oblique with respect to the plane perpendicular to the traveling direction.

9. The method of manufacturing a gas turbine part according to claim 8, wherein the both sides of the sheet cast member are cooled in a different degree of cooling, respectively, by controlling a flow rate of a coolant or by a cooling mechanism.

10. The method of manufacturing a gas turbine part according to claim 1, wherein a desired cooling performance and a desired heat insulating performance of the member of the gas turbine part are realized by controlling a pore diameter and/or a porosity by controlling at least one of a pressure of the atmospheric gas and a speed of solidifying of the metal.

11. The method of manufacturing a gas turbine part according to claim 1, wherein the metal to be melted is a sheet metal;

wherein the sheet metal is locally heated to generate a partial molten region in the sheet metal and cooled to solidify the partial molten region while the partial molten region is moved.

12. The method of manufacturing a gas turbine part according to claim 11, wherein the sheet metal is heated by at least one of a heater and a high frequency coil to generate the partial molten region and cooled by a blower or the like to solidify the partial molten region.